B

No. 21—1909.

# British Engineering Standards Committee.

*Formed in 1901 by*

THE INSTITUTION OF CIVIL ENGINEERS.
THE INSTITUTION OF MECHANICAL ENGINEERS.
THE INSTITUTION OF NAVAL ARCHITECTS.
THE IRON AND STEEL INSTITUTE.
THE INSTITUTION OF ELECTRICAL ENGINEERS.

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REPORT

ON

# BRITISH STANDARD

# PIPE THREADS

FOR

## IRON OR STEEL PIPES AND TUBES.

(REVISED NOVEMBER, 1909.)

LONDON:
PUBLISHED FOR THE COMMITTEE BY CROSBY LOCKWOOD & SON,
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*May, 1918.*

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MR. CHARLES DRESSER (*Assistant Secretary*).

* Succeeded the late SIR JOHN WOLFE BARRY, K.C.B., February, 1918.

## BRITISH ENGINEERING STANDARDS COMMITTEE.

The following is a list of Members of the Sectional Committee on Screw Threads and Limit Gauges entrusted with the first revision of this Report.

### SECTIONAL COMMITTEE ON SCREW THREADS AND LIMIT GAUGES.

*November, 1909.*

*Chairman*, Mr. H. F. DONALDSON.*
*Admiralty*, Eng.-Comm. E. F. Ellis, R.N.
*War Office*, Col. H. C. L. Holden, R.A.
*Crown Agents for the Colonies*, Mr. G. Blake Oughterson.*
*Board of Trade*, Major P. A. MacMahon, R.A.
*National Physical Laboratory*, Dr. R. T. Glazebrook.
*Institution of Mechanical Engineers*, Mr. Henry Lea*; Mr. Michael Longridge.
*Institution of Naval Architects*, Mr. Sydney W. Barnaby.
*Institute of Marine Engineers*, Mr. D. Hulme; Mr. W. I. Taylor.
*Institution of Gas Engineers*, Mr. J. W. Helps.
*Locomotive Manufacturers' Parliamentary Association*, Mr. J. F. Robinson; Mr. W. Collingwood.
*Association of Railway Locomotive Engineers*, Mr. H. A. Ivatt; Mr. T. Hurry Riches.*
*British Tube Trade Association*, Mr. A. W. Hutton; Mr. J. G. Stewart.
*Brass Tube Association*, Mr. E. Grice.
*Institution of Automobile Engineers*, Mr. A. Sharp.

Sir William Preece, K.C.B.*; Col. R. E. B. Crompton, C.B.; Mr. H. I. Brackenbury (*Sir W. G. Armstrong, Whitworth & Co., Ltd.*); Mr. L. S. Crawshaw (*The Automatic Standard Screw Co., Ltd.*); Mr. R. Matthews (*Sir W. G. Armstrong, Whitworth & Co., Ltd.*); Mr. William Reavell (*Reavell & Co., Ltd.*); Mr. C. Salmon, Inspector of Machinery, R.N. (retired) (*Vickers, Sons & Maxim, Ltd.*); Mr. J. E. Storey † (*Newall Engineering Co., Ltd.*); Mr. W. Taylor (*Taylor, Taylor & Hobson, Ltd.*).

* Since deceased.

† Resigned 23rd September, 1908.

## PREFACE TO FIRST EDITION.

The question of standardising Screw Threads and Limit Gauges was first discussed by the Main Committee at their meeting held on October 23rd, 1902, when it was decided to obtain the opinions of the various Sectional Committees as to the advisability of forming a Committee to deal with these subjects.

The opinions of the various Sectional Committees being favourable, the Committee on Screw Threads and Limit Gauges was appointed at a meeting of the Main Committee held on February 13th, 1903.

The first meeting of this Committee was held on March 11th, 1903.

At the second meeting of this Committee, held on April 21st, 1903, attention was drawn to the necessity for the standardisation of Pipe Threads for Iron or Steel Pipes and Tubes, and Mr. J. G. Stewart and Mr. A. W. Hutton, the representatives of the British Tube Association, were asked to submit a draft Report on this subject for the consideration of the Committee.

The draft Report was submitted and received certain modifications and additions. The Committee on Screw Threads and Limit Gauges adopted the Report in its present form at their twenty second meeting held on March 2nd, 1905.

The thanks of the Committee are due to Mr. J. G. Stewart and Mr. A. W. Hutton for the assistance rendered by them in drawing up the preliminary Report, and to Dr. R. T. Glazebrook and Mr. R. Matthews for aiding in the preparation of the present Report.

This Report was approved by the Main Committee at their meeting on March 23rd, 1905.

H. F. DONALDSON,
*Chairman of the Sectional Committee on Screw Threads and Limit Gauges.*

## PREFACE TO SECOND EDITION.

The following are the principal revisions embodied in the first revised issue of this Report.

The Clauses dealing with the gauging of the Threads on pipe ends and in couplers have been materially enlarged, and the employment of coned gauges for gauging the taper screws on pipe ends and in couplers has been dealt with.

Further recommendations are made with respect to the position of the gauge diameter, which it is hoped will lead to greater accuracy in the cutting of the threads on pipe ends.

The Report in its present form was approved by the Main Committee at their meeting on October 27th, 1909.

H. F. DONALDSON,
*Chairman of the Sectional Committee on Screw Threads and Limit Gauges.*

# REPORT

ON

# BRITISH STANDARD

# PIPE THREADS

FOR

## IRON OR STEEL PIPES AND TUBES.

(REVISED NOVEMBER, 1909.)

### DEFINITIONS.

*Gauge Diameter.*—The Gauge Diameter is the *full diameter* of the Standard Male Parallel Screw Gauge which the Parallel Coupler, to be used with a pipe of that size, is required to fit.

The following definitions of the elements of a Screw-Thread, shewn in Figures 1 and 2, have been approved by the Committee for general use, and apply equally to Parallel Pipe Threads :—

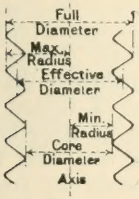


Fig. 1.

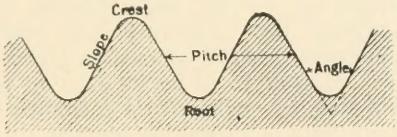


Fig. 2.

*Effective Diameter of a Screw.*—The Effective Diameter of a screw, having a single thread, is the length of a line drawn through the axis and at right angles to it, measured between the points where the line cuts the slopes of the thread. (Fig. 1.)

*Core Diameter.*—The Core Diameter is twice the minimum radius of a screw, measured at right angles to the axis. (Fig. 1.)

NOTE.—From Fig. 1 it will be seen that the "*core diameter*" of the male thread is measured between the roots of the thread; it should be borne in mind, however, that the "*core diameter*" of the female thread, being approximately the same dimension, is measured between the crests of the thread.

*Full Diameter.*—The Full Diameter is twice the maximum radius of a screw, measured at right angles to the axis. (Fig. 1.)

*Crest.*—The Crest is the prominent part of the thread, whether of the male screw or of the female screw. (Fig. 2.)

*Root.*—The Root is the bottom of the groove of the thread, whether of the male screw or of the female screw. (Fig. 2.)

*Slope of Thread.*—The Slope of the Thread is the straight part of the thread which connects the crest and root. (Fig. 2.)

*Angle of Thread.*—The Angle of the Thread is the angle between the slopes, measured in the axial plane. (Fig. 2.)

*Pitch.*—The pitch is the distance in inches measured along a line parallel to the axis of the screw between the point where it cuts any thread of the screw and the point at which it next meets the corresponding part of the same thread. (Fig. 2.) The *reciprocal of the pitch* measures the number of turns per inch.

N.B.—The Committee recognise that it is the practice of the Tube Trade to make the thread on the conical ends of Pipes at right angles to the surface of the cone, in which case the pitch is the projection on to the axis of the Pipe of the distance between the points defined above measured along a line parallel to the surface of the cone.

## RECOMMENDATIONS.

### Form of Thread.

1. The Committee's enquiries regarding Pipe Threads have led them to the conclusion that the existing *form* of Whitworth Thread should not be altered.

After very careful consideration as to the advisability of employing the 60° angle Thread on Iron or Steel Tubes and Couplers, the Committee have come to the conclusion that the arguments brought forward in favour of this form of thread have been insufficient to justify them in recommending its adoption for this class of work. It is therefore recommended that the Whitworth form of thread be adopted on all Pipe Threads for Iron or Steel Tubes manufactured in accordance with the Table in this Report.

### Definition of Whitworth Thread.

2. In the *Whitworth Form of Thread* the angle between the slopes, measured in the axial plane, is 55° ; the threads are rounded equally at crests and roots, leaving a depth of thread approximately equal to 0·64 times the pitch.

For simplicity the depth so derived has been approximated in the Table (page 14), and the depths there given are to be regarded as the Standard Depths.

### Threads.

3. All Threads for Iron or Steel Pipes and Tubes, purporting to be of British Standard Dimensions, shall have the Gauge Diameters, Core Diameters and Number of Threads per inch given in the Table accompanying this Report (page 14), and all Threads of Class I. (see Clause 6) shall have correct positions of Gauge Diameters as defined in Columns 9, 10 and 11 of that Table.

**Tubes.**

**4.** The Committee recommend the adoption of the nominal sizes of bores for Iron or Steel Tubes contained in the first column of the Table. All Iron or Steel Tubes, purporting to be of British Standard Dimensions, shall have approximately the Outside Diameters given in Column 2 of the Table.

**Couplers and Fittings.**

**5.** Couplers and Fittings for the Tubes shall be manufactured to the *gauge diameter*, *form* and *length of thread* recommended by the Committee, and each Coupler or Fitting shall be capable of being screwed by hand on to the Standard Male Screw Shop Gauge, and when screwed thereon shall have no perceptible shake: the recommendations made with regard to the threads in Couplers shall apply equally to elbows, tees, fourways, valve chambers, etc.

**Taper and Parallel Screwed Connections.**

**6.** Two classes of Screwed Connections between Tubes and Couplers are recognised by the Committee, viz.:—

Class I. The Taper Screw.
Class II. The Parallel Screw.

**Taper Screws.**

**7.** In Class I. the Screw at the Pipe-end shall be conical, being coned one-sixteenth of an inch ($\frac{1}{16}$ in.) measured on the diameter per inch of length.

The screw in the Coupler may be either parallel or conical, as required; in the latter case special conical gauges (*see* fig. 5, p. 12) will be necessary. The common form of Coupler has a parallel thread and is screwed on to a conical pipe-end; conical Couplers are sometimes employed where exceptionally good fits are required.

**Length of Thread in Coupler.**

**8.** In order to ensure that the Pipe-ends shall not butt against each other within the Coupler, and that a sufficient length of Thread is comprised in each joint, the Committee recommend:—

(*a*) That the length of Thread within the Couplers shall be not less than twice the length of Thread on the Pipe-ends, *i.e.*, not less than the values given in the Table (Column 8).

(*b*) That the length of Thread within the screwed portion at the end of any fitting (other than flanges) shall be not less than the minimum length of Thread on the corresponding Pipe-end (Column 7).

**Length of Thread on Pipe-End.**

**9.** The length of Thread on the Pipe-end in Class I. and Class II. shall be in accordance with the values given in Column 7 of the Table on page 14.

The figures given in Column 7 of the Table can be obtained approximately by the formula:—

$$L = \sqrt[3]{d^2} - \tfrac{1}{8} \text{ in.}$$

where $L$ = Length of Thread in inches on Pipe-end,
and $d$ = Nominal Bore of Pipe in inches.

**Parallel Screws.**

**10.** In Class II. the Screws at the Pipe-end and in the Coupler shall both be parallel to the axis of the Pipe throughout the whole length of the thread.

**Standard Tubes and Pipe Threads.**

**11.** The Committee recommend that all Iron and Steel Pipes and Tubes made in accordance with the sizes in the accompanying Table be known as "*British Standard Iron or Steel Pipes and Tubes,*" and the Screws on the Pipes and Tubes and in the Couplers as "*British Standard Pipe Threads for Iron or Steel Pipes and Tubes.*" (*B.S.P.*).

**Brass, Copper, and Thin Tubes.**

**12.** Although this Report purports to deal only with Iron and Steel Pipes and Tubes, the subject of Tubes made of Copper, Brass, or other material has been considered and the Committee recommend that in those cases where the outside diameters and thicknesses of metal permit the Standard Pipe Threads herein specified should be adopted for such tubes. In the case of tubes of Iron or Steel, Copper, Brass or other material, where the diameters or thickness of metal will not permit of the adoption of Standard Pipe Threads, the Committee recommend that, except in the case of Steel Conduits for Electrical Wiring (Report No. 31), the pitches of Threads adopted should be among those specified in Column 6 of the Table on page 14.

**Gauges.**

**13.** The Committee have deposited a complete set of Standard Male Screw Gauges made in accordance with the sizes specified in the Table with the National Physical Laboratory for purposes of reference.

For the purposes of manufacture the Committee recommend the adoption of two classes of Male and Female Screw Gauges, viz.:—

Class A—Reference Gauges.
Class B—Shop Gauges.

The Male Reference Gauges should be copies of the Standard Male Screw Gauges deposited with the National Physical Laboratory, and are intended for use by manufacturers and others when checking their own Shop Gauges (Class B.).

The Male Reference Gauges should be verified, and their accuracy certified by the National Physical Laboratory.

The Shop Gauges, both Male and Female, are for use in the shop to determine the accuracy of the work itself.

**Position of Gauge Diameter.**

**14.** *Gauge Diameter* (*Taper Screw, Class I.*).—In order to ensure correct gauging, it is necessary to define the position of the Gauge Diameter on the Pipe-end and in the Coupler. The position of the Gauge Diameter on the Pipe-end is shown in Fig. 3 and is defined by Columns 9, 10 and 11 of the Table on page 14, while the position of the Gauge Diameter in the Coupler or fitting is at the outer end of the thread either for parallel or conically screwed couplers or fittings.

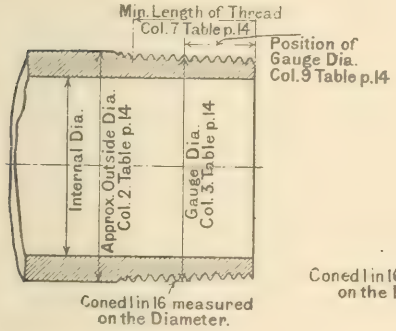


Fig. 3.

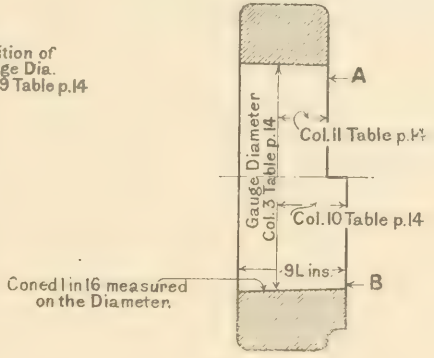


Fig. 4.

**Gauging.**

*Gauging the Pipe-End* (*Taper Screw, Class I.*).—For Shop purposes the Committee recommend the employment of a gauge of the type shown in Figure 4.

The width of the gauge is ·9**L** where **L** is the length of the thread on the Pipe-end as given in Column 7 of the Table on page 14.

The distance apart of the surfaces **A** and **B** for any given size is the difference between the values of the figures in Columns 10 and 11 of the Table on page 14, and is approximately one-third of the Standard distance of the gauge diameter from the end of the Tube (Column 9).

This Gauge, having a plain internal conical surface, is slipped over the Pipe-end, and when pressed home by hand, the Pipe-end must protrude beyond the surface **A** but not beyond the surface **B**

For checking the accuracy of the pitch and form of thread a Comb Gauge should be employed.

*Gauging the Pipe-end* (*Parallel Screw, Class II.*).—The Committee recommend that "Go" and "Not go" plain cylindrical ring gauges should be employed bearing on the full diameter of the screw.

For checking the accuracy of the pitch and form of thread a Comb Gauge should be employed.

*Gauging the Couplers and Fittings* (*Parallel Screw, Class II.*). —For gauging the gauge-diameter in the Coupler or Fitting, "Go" and "Not go" threaded gauges should be employed, having a sufficiently acute angle of thread to bear only on the roots of the thread in the Coupler.

*Gauging the Couplers and Fittings* (*Taper Screws, Class I.*). —For gauging Couplers and Fittings having Taper Screws a threaded plug gauge of the type shown in Figure 5 should be employed having a sufficiently acute angle of thread to bear only on the roots of the thread in the Coupler.

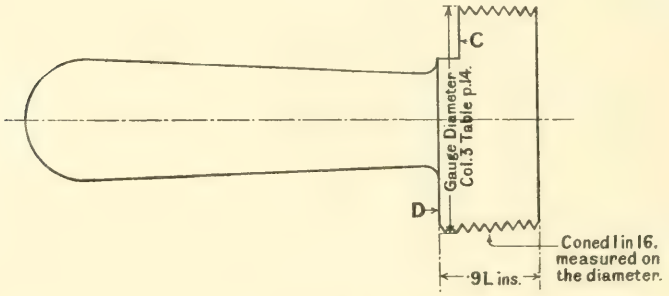


Fig. 5.

The width of the gauge is ·9**L** where **L** is the length given in Column 7 of the Table on page 14. The distance apart of the surfaces **C** and **D** is the difference between the values of the figures in Columns 10 and 11 of the Table, and is approximately one-third of the Standard distance of the gauge diameter from the end of the Tube (Column 9). When the gauge is screwed home by hand, the surface **C** must pass inside the Coupler, while the surface **D** must remain outside.

**NOTES ON TABLE (page 14).**

The Committee have preserved the old Whitworth Standards as far as possible in the simplified dimensions for screwing sizes on Tubes up to $2\frac{1}{4}$ ins. nominal bore. The Committee have been guided in fixing the gauge diameters of the larger screwing sizes by the advantages of making the Outside Diameters of the Tubes even quarters of inches.

Columns 1 and 3 of the Table give the nominal Bore of the Tube and the Full Diameter of the Screw in the Coupler for use with that Tube. The diameter of this Screw has been chosen, in all cases, so that the Coupler can be screwed by hand on to the Tube, leaving from 4 to 8 threads exposed.

TABLE.

## BRITISH STANDARD PIPE THREADS.

### SCHEDULE OF SIZES.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| Nominal Bore of Tube. | Approximate Outside Diameter of Black Tube. | Gauge Diameter (See Definition). | Depth of Thread. | Core Diameter, measured at same distance from end of pipe as the Gauge Diameter. | Number of Threads per Inch. | Length of Thread. | | Distance of Gauge Diameter from Pipe-end. (Class I. Taper Screw.) | | |
| | | | | | | L On Pipe-end. Min. | In Coupler. Min. | Standard. | Max. | Min. |
| ins. | ins. | ins. | in. | ins. | ins. | ins. | ins. | ins. | ins. | ins. |
| 1/8 | 13/32 | 0·383 | ·0230 | 0·337 | 28 | 3/8 | 3/4 | 5/32 (·1563) | ·18 | ·13 |
| 1/4 | 17/32 | 0·518 | ·0335 | 0·451 | 19 | 7/16 | 7/8 | 3/16 (·1875) | ·22 | ·16 |
| 3/8 | 11/16 | 0·656 | ·0335 | 0·589 | 19 | 1/2 | 1 | 1/4 (·2500) | ·29 | ·21 |
| 1/2 | 27/32 | 0·825 | ·0455 | 0·734 | 14 | 5/8 | 1 1/4 | 1/4 (·2500) | ·29 | ·21 |
| 5/8 | 15/16 | 0·902 | ·0455 | 0·811 | 14 | 5/8 | 1 1/4 | 1/4 (·2500) | ·29 | ·21 |
| 3/4 | 1 1/16 | 1·041 | ·0455 | 0·950 | 14 | 3/4 | 1 1/2 | 3/8 (·3750) | ·44 | ·31 |
| 7/8 | 1 7/32 | 1·189 | ·0455 | 1·098 | 14 | 3/4 | 1 1/2 | 3/8 (·3750) | ·44 | ·31 |
| 1 | 1 11/32 | 1·309 | ·0580 | 1·193 | 11 | 7/8 | 1 3/4 | 3/8 (·3750) | ·44 | ·31 |
| 1 1/4 | 1 11/16 | 1·650 | ·0580 | 1·534 | 11 | 1 | 2 | 1/2 (·5000) | ·58 | ·42 |
| 1 1/2 | 1 29/32 | 1·882 | ·0580 | 1·766 | 11 | 1 | 2 | 1/2 (·5000) | ·58 | ·42 |
| 1 3/4 | 2 3/32 | 2·116 | ·0580 | 2·000 | 11 | 1 1/8 | 2 1/4 | 5/8 (·6250) | ·73 | ·52 |
| 2 | 2 3/8 | 2·347 | ·0580 | 2·231 | 11 | 1 1/8 | 2 1/4 | 5/8 (·6250) | ·73 | ·52 |
| 2 1/4 | 2 7/8 | 2·587 | ·0580 | 2·471 | 11 | 1 1/4 | 2 1/2 | 11/16 (·6875) | ·80 | ·57 |
| 2 1/2 | 3 | 2·960 | ·0580 | 2·844 | 11 | 1 1/4 | 2 1/2 | 11/16 (·6875) | ·80 | ·57 |
| 2 3/4 | 3 1/4 | 3·210 | ·0580 | 3·094 | 11 | 1 3/8 | 2 3/4 | 13/16 (·8125) | ·95 | ·68 |
| 3 | 3 1/2 | 3·460 | ·0580 | 3·344 | 11 | 1 3/8 | 2 3/4 | 13/16 (·8125) | ·95 | ·68 |
| 3 1/4 | 3 3/4 | 3·700 | ·0580 | 3·584 | 11 | 1 1/2 | 3 | 7/8 (·8750) | 1·02 | ·73 |
| 3 1/2 | 4 | 3·950 | ·0580 | 3·834 | 11 | 1 1/2 | 3 | 7/8 (·8750) | 1·02 | ·73 |
| 3 3/4 | 4 1/4 | 4·200 | ·0580 | 4·084 | 11 | 1 1/2 | 3 | 7/8 (·8750) | 1·02 | ·73 |
| 4 | 4 1/2 | 4·450 | ·0580 | 4·334 | 11 | 1 5/8 | 3 1/4 | 1 (1·0000) | 1·17 | ·83 |
| 4 1/2 | 5 | 4·950 | ·0580 | 4·834 | 11 | 1 5/8 | 3 1/4 | 1 (1·0000) | 1·17 | ·83 |
| 5 | 5 1/2 | 5·450 | ·0580 | 5·334 | 11 | 1 3/4 | 3 1/2 | 1 1/8 (1·1250) | 1·31 | ·94 |
| 5 1/2 | 6 | 5·950 | ·0580 | 5·834 | 11 | 1 7/8 | 3 3/4 | 1 1/4 (1·2500) | 1·46 | 1·04 |
| 6 | 6 1/2 | 6·450 | ·0580 | 6·334 | 11 | 2 | 4 | 1 3/8 (1·3750) | 1·60 | 1·15 |
| 7 | 7 1/2 | 7·450 | ·0640 | 7·322 | 10 | 2 1/8 | 4 1/4 | 1 3/8 (1·3750) | 1·60 | 1·15 |
| 8 | 8 1/2 | 8·450 | ·0640 | 8·322 | 10 | 2 1/4 | 4 1/2 | 1 1/2 (1·5000) | 1·75 | 1·25 |
| 9 | 9 1/2 | 9·450 | ·0640 | 9·322 | 10 | 2 1/4 | 4 1/2 | 1 1/2 (1·5000) | 1·75 | 1·25 |
| 10 | 10 1/2 | 10·450 | ·0640 | 10·322 | 10 | 2 3/8 | 4 3/4 | 1 5/8 (1·6250) | 1·90 | 1·35 |
| 11 | 11 1/2 | 11·450 | ·0800 | 11·290 | 8 | 2 1/2 | 5 | 1 5/8 (1·6250) | 1·90 | 1·35 |
| 12 | 12 1/2 | 12·450 | ·0800 | 12·290 | 8 | 2 1/2 | 5 | 1 5/8 (1·6250) | 1·90 | 1·35 |
| 13 | 13 1/2 | 13·680 | ·0800 | 13·520 | 8 | 2 5/8 | 5 1/4 | 1 5/8 (1·6250) | 1·90 | 1·35 |
| 14 | 14 1/2 | 14·680 | ·0800 | 14·520 | 8 | 2 3/4 | 5 1/2 | 1 3/4 (1·7500) | 2·04 | 1·46 |
| 15 | 15 1/2 | 15·680 | ·0800 | 15·520 | 8 | 2 3/4 | 5 1/2 | 1 3/4 (1·7500) | 2·04 | 1·46 |
| 16 | 16 1/2 | 16·680 | ·0800 | 16·520 | 8 | 2 7/8 | 5 3/4 | 1 7/8 (1·8750) | 2·19 | 1·56 |
| 17 | 17 1/2 | 17·680 | ·0800 | 17·520 | 8 | 3 | 6 | 2 (2·0000) | 2·33 | 1·67 |
| 18 | 18 1/2 | 18·680 | ·0800 | 18·520 | 8 | 3 | 6 | 2 (2·0000) | 2·33 | 1·67 |

# British Engineering Standards Association.

## PRICE LIST
### OF
## BRITISH STANDARD SPECIFICATIONS AND REPORTS.

**NOVEMBER, 1918.**

*(This List cancels all previous Lists.)*

NOTE.—*Directly the necessary arrangements have been completed the Publications of the Association, with a few exceptions, will also be issued in French, Italian, Spanish and Portuguese. Both the English Editions and the Foreign Translations will be published in octavo form, and will be available at 1/- net per copy or its equivalent in foreign money.*

| Report No. | | Net. | Post. |
|---|---|---|---|
| 1-1914 | **Rolled Sections for Structural Purposes,** Lists of ... ... | 1/- | 1/2 |
| 2-1903 | **Tramway Rails and Fishplates,** Specification and Sections of ... | 1 | 1/3 |
| 3-1903 | **Influence of Gauge Length and Section of Test Bar on the Percentage of Elongation,** Report on, by Professor W. C. UNWIN, F.R.S. ... ... ... ... ... | 1/- | 1/2 |
| 4-1903 | **Beams,** Properties of (included in No. 5) ... ... ... | Withdrawn. | |
| 5-1905 | **Locomotives for Indian Railways,** First Report on (Superseded by No. 50) ... ... ... | Withdrawn. | |
| 6-1904 | **Rolled Sections for Structural Purposes,** Properties of ... | 1 | 1/3 |
| 7-1910 | **Copper Conductors,** Tables of ... ... ... ... ... | 1 | 1/3 |
| 8-1904 | **Tramway Poles,** Specification for Tubular ... ... ... ... | 1/- | 1/2 |
| 9-1909 | **Railway Rails,** Specification and Sections of Bull Head ... ... | 1 | 1/3 |
| 10-1904 | **Pipe Flanges,** Tables of ... | 1/- | 1/2 |
| 11-1909 | **Railway Rails,** Specification and Sections of Flat Bottom ... | 1/- | 1/4 |
| 12-1915 | **Portland Cement,** Specification for ... ... ... ... ... | 1 | 1/3 |
| 13-1910 | **Steel for Shipbuilding,** Specification for Structural... ... | 1/- | 1/2 |
| 14-1907 | **Steel for Marine Boilers,** Specification for Structural ... ... | 1/- | 1/2 |
| 15-1912 | **Steel for Bridges,** etc., and General **Building Construction,** Specification for Structural ... ... | 1/- | 1/2 |
| 16-1905 | **Telegraph Material,** Specification for ... ... ... ... ... | 1 | 1/5 |
| 17-1904 | **Electrical Machinery.** Report on (Superseded by No. 72-1917) | Withdrawn. | |
| 18-1910 | **Tensile Test Pieces,** Forms of | Gratis | 2 |
| 19-1905 | **Temperature Experiments on Field Coils** of Electrical Machines, Report on ... ... ... ... ... | 1 | 1/3 |
| 20-1913 | **Screw Threads,** Report on | 1/- | 1/2 |
| 21-1909 | **Pipe Threads** for Iron or Steel Pipes and Tubes, Report on ... | 1/- | 1/2 |
| 22-1905 | **Insulating Materials,** Report on the **Effect of Temperature** on ... ... ... ... ... | Withdrawn. | |
| 23-1905 | **Trolley Groove and Wire,** Standards for ... ... ... | 1/- | 1/2 |
| 24-1911 | **Railway Rolling Stock,** Specifications for **Material** used in the Construction of— | | |
| | Part I. Locomotive, Carriage and Wagon Axles ... ... | 1/- | 1/2 |
| | ,, II. Locomotive, Carriage and Wagon Tyres ... ... | 1/- | 1/2 |
| | ,, III. Laminated, Volute and Helical Springs and Steel for Laminated Springs ... | 1/- | 1/2 |
| | ,, IV. Steel Forgings, Blooms and Castings ... ... | 1/- | 1/2 |
| | ,, V. Copper Plates, Rods and Tubes and Brass Tubes ... | 1/- | 1/2 |
| | ,, VI. Steel Plates, Angles, etc., and Rivets for Locomotives, Carriages and Wagons ... | 1/- | 1/2 |
| 25-1906 | **Errors in Workmanship,** Report on ... ... ... ... | Withdrawn. | |
| 26-1907 | **Locomotives for Indian Railways,** Second Report on (Superseded by No. 50) ... ... ... | Withdrawn. | |
| 27-1906 | **Limit Gauges for Running Fits,** Report on Standard Systems of | 1/- | 1/2 |
| 28-1908 | **Nuts, Bolt Heads and Spanners,** Report on ... ... | 1/- | 1/2 |
| 29-1909 | **Steel Forgings for Marine Purposes,** Specification for Ingot. | 1/- | 1/2 |
| 30-1907 | **Steel Castings for Marine Purposes,** Specification for ... | 1/- | 1/2 |
| 31-1910 | **Steel Conduits for Electrical Wiring,** Specification for ... | 1/- | 1/2 |
| 32-1907 | **Steel Bars for use in Automatic Machines,** Specification for | 1/- | 1/2 |

| Report No. | | Net. | Post free. |
|---|---|---|---|
| 33-1906 | **Carbon Filament Glow Lamps,** Specification for | 1 - | 1 2 |
| 34-1913 | **Screw Threads,** Tables of British Standard Whitworth, British Standard Fine and British Standard Pipe Threads | Withdrawn. | |
| 35-1907 | **Copper Alloy Bars** for use in **Automatic Machines,** Specification for | 1 - | 1 3 |
| 36-1907 | **Electrical Machinery,** Report on (Superseded by No. 72-1917) | Withdrawn. | |
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| 38-1913 | **Limit Gauges for Screw Threads,** Report on Standard Systems for | Withdrawn. | |
| 39-1908 | **Screw Threads,** Combined Reports on | Withdrawn. | |
| 40-1908 | **Cast Iron Low Pressure Heating Pipes,** Specification for Spigot and Socket | 1 | 1 2 |
| 41-1908 | **Cast Iron Flue or Smoke Pipes,** Specification for Spigot and Socket | 1 - | 1 2 |
| 42-1909 | **Steam Engines for Electrical Purposes,** Report on Reciprocating | 1 - | 1 2 |
| 43-1909 | **Boiler Tubes,** Specification for Charcoal **Iron** Lap-welded | 1 - | 1 2 |
| 44-1909 | **Cast Iron Pipes for Hydraulic Power,** Specification for | 1 | 1 2 |
| 45-1917 | **Sparking Plugs** (for Internal Combustion Engines), Report on Dimensions for | 1 | 1 2 |
| 46-1909 | **Keys and Keyways,** Specification for | 1 - | 1 2 |
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| 50-1910 | **Locomotives for Indian Railways,** Third Report on (Superseding Nos. 5 and 26) | Under Revision. | |
| 51-1913 | **Wrought Iron** for use in Railway Rolling Stock ("Best-Yorkshire" and Grades A, B and C), Specification for | 1 - | 1 3 |
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| 53-1913 | **Boiler Tubes** for Locomotive Boilers, Specification for Cold Drawn Weldless **Steel** | 1 - | 1 2 |
| 54-1911 | **Screw Threads, Nuts and Bolt Heads** for use in **Automobile** Construction, Report on | 1- | 1 2 |
| 55-1911 | **Copper and Bronze Wire,** Report on Hard Drawn | 1- | 1 3 |
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| 62-1913 | **Marine Boiler Stays, Screwing** for | Gratis. | - 2 |
| 63-1913 | **Broken Stone and Chippings,** Specification for Sizes of | 1 - | 1 2 |
| 64-1913 | **Fishbolts and Nuts** for Railway Rails, Specification for | 1 - | 1 2 |
| 65-1914 | **Salt-Glazed Ware Pipes,** Specification for | 1/- | 1 2 |
| 66-1914 | **Copper-Alloy Three-Piece Unions** (for Low and Medium Pressure Screwed Copper Tubes), Specification for | 1/- | 1 3 |
| 67-1914 | **Ceiling Roses,** Specification for Two- and Three-Plate | 1 - | 1 2 |
| 68-1914 | **Steel Conductor Rails,** Method of Specifying the **Resistance** of | 1 - | 1 2 |
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| 70-1915 | **Pneumatic Tyre Rims** for Automobiles, Motor Cycles and Cycles, Report on | 1/- | 1/3 |
| 71-1917 | **Wheel Rims and Tyre Bands for Solid Rubber Tyres** for **Automobiles,** Report on Dimensions of | 1- | 1 2 |
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| 77-1916 | **Electrical Pressures** for **New Systems** and **Installations** (Low and Medium Pressures) | Gratis | - 2 |
| 78 | 1917 **Cast Iron Pipes** and Special Castings for **Water, Gas** and **Sewage,** Specification for | 1/- | 1 3 |
| 80-1917 | **Magnetos for Automobile Purposes,** Report on Dimensions of | 1/- | 1/2 |
| 83 | **April, 1918, Dope** and **Protective Covering** for **Aircraft,** Standard of Reference for | 1 - | 1/2 |
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| 85 | **April, 1918, Steel** for **Aircraft** for **Government Purchases** in the **United States of America,** Specifications for | Under Revision. | |

## INTERIM REPORTS.

| | | | |
|---|---|---|---|
| C.L. 2582 | **Ball Journal Bearings for Automobiles,** Interim Report on Sizes of Single Row | Gratis | -/2 |
| C.L. 3750 | **French Metric Screw Threads** for **Aircraft** Purposes, Interim Report on | -/6 | -/8 |

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